

## **CLAIMS:**

What is claimed is:

1 1. A method comprising:

2 receiving content from a host device for transmission via two or more tones in a

3 multicarrier communication channel from two or more antenna(e); and

4 distributing elements of the received content across one or more of the antenna(e) and  
5 tone(s) to introduce full-order transmit diversity.

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2 2. A method according to claim 1, wherein the received content is a stream of quadrature  
3 amplitude modulation (QAM) symbols, received from the host device, or an application or agent  
4 executing thereon.

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2 3. A method according to claim 1, the element of distribution comprising:  
3 cyclically disperses elements of the received content across  $Mt$  transmit antennas, and a  
4 number ( $N$ ) of multicarrier tones for each of a plurality of Rayleigh fading channel taps ( $L$ ).

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2 4. A method according to claim 3, wherein the cyclical dispersion of the elements of the  
3 received content provides full-order transmit diversity according to  $Mt \cdot Mr \cdot L$ , where  $Mr$  is the  
4 number of receive antennae.

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2 5. A method according to claim 4, wherein the cyclic dispersion is a function of delay  
3 spread  $L$ .

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1 6. A method according to claim 4, wherein the cyclic dispersion of the elements is  
2 adaptively determined based, at least in part, on an observation of multipath conditions of the  
3 channel.

1 7. A method according to claim 6, wherein the cyclic dispersion is increased as a larger  
2 number of frequency blocks (L) where there is a high delay spread.

1 8. A method according to claim 4, wherein cyclic dispersion is decreased over a fewer  
2 number of frequency blocks to mitigate a danger of horizontal wraparound of the elements.

1 9. A method according to claim 4, wherein a tone delay from antenna to antenna is great  
2 than one (1).

1 10. A method according to claim 9, wherein the tone delay from antenna to antenna is  
2 adaptively determined based, at least in part, on the spatial correlation, wherein the more  
3 correlated the fading on different antennas, the greater the tone delay from antenna to antenna.

1 11. A method according to claim 2, wherein the received content are complex symbols that  
2 are linear or nonlinear combinations of input QAM symbols.

1 12. A method according to claim 3, further comprising:  
2 performing additional channel processing prior to transmission of the full-order transmit  
3 diversity channel to a remote device.

13. A method according to claim 12, the additional channel processing comprising one or more of converting dispersed content from a time domain to a frequency domain, introducing a cyclical prefix into the signal stream, and performing front-end radio frequency (RF) processing prior to transmission via one or more of the transmit antenna(e)  $M_t$ .

14. A storage medium comprising content which, when executed by an accessing device, causes the device to implement a method according to claim 1.

15. An apparatus comprising:  
a diversity agent, to receive content from a host device and distribute elements of the received content across one or more of a plurality of transmit antenna(e) and tone(s) of a multicarrier communication channel to generate a transmit signal exhibiting full-order transmit diversity; and  
a transmitter, responsive to the diversity agent, to transmit the generated transmit signal.

16. An apparatus according to claim 15, wherein the diversity agent cyclically disperses elements of the received content across  $M_t$  transmit antennas, and a number ( $N$ ) of multicarrier tones for each of a plurality of Rayleigh fading channel taps ( $L$ ) to provide the full-order diversity transmit signal.

17. An apparatus according to claim 15, the transmitter comprising:  
an inverse discrete Fourier transform (IDFT) element, coupled to the diversity agent, to receive the transmit signal and convert it from a frequency domain to a time domain; and

a radio frequency (RF) processing element, coupled with the IDFT element, to transmit the generated transmit signal via a select one or more of a plurality  $M_t$  of transmit antennae.

18. An apparatus according to claim 15, further comprising:

a memory to store content, at least a subset of which is executable content to implement a diversity agent; and

control logic, coupled to the memory and the transmitter, to access and execute at least a subset of the content stored in the memory to implement the diversity agent.

19. An apparatus according to claim 18, wherein the control logic is a baseband processor.

20. An apparatus according to claim 18, wherein the control logic is an applications processor.

21. An apparatus according to claim 15, wherein the apparatus is a transceiver.

22. A storage medium comprising content which, when executed, causes an accessing machine to implement a diversity agent according to claim 15.

23. A system comprising:

two or more dipole antennae; and

a diversity agent, to receive content from a host device and distribute elements of the received content across one or more of the two or more dipole antennae and tone(s) of a

multicarrier communication channel to generate a transmit signal exhibiting full-order transmit diversity.

24. A system according to claim 23, further comprising:

a transmitter, coupled between the diversity agent and the dipole antennae, to receive one or more substreams of cyclically distributed content from the diversity agent and complete channel processing prior to transmission of the transmit signal from the dipole antennae.

25. A system according to claim 24, the transmitter comprising:

an inverse discrete Fourier transform (IDFT) element, coupled to the diversity agent, to receive the one or more substreams of cyclically distributed content in a frequency domain and convert it to a time domain representation thereof; and

a radio frequency (RF) processing element, coupled to the IDFT element, to receive the time domain representation of the cyclically distributed content and amplify it for transmission from the dipole antennae.

26. A system according to claim 25, the transmitter further comprising:

a cyclical prefix insertion element, coupled between the IDFT element and the RF processing element, to introduce cyclical prefix into the time domain representation of the generated transmit signal.

27. A system according to claim 25, wherein the system is a transceiver.